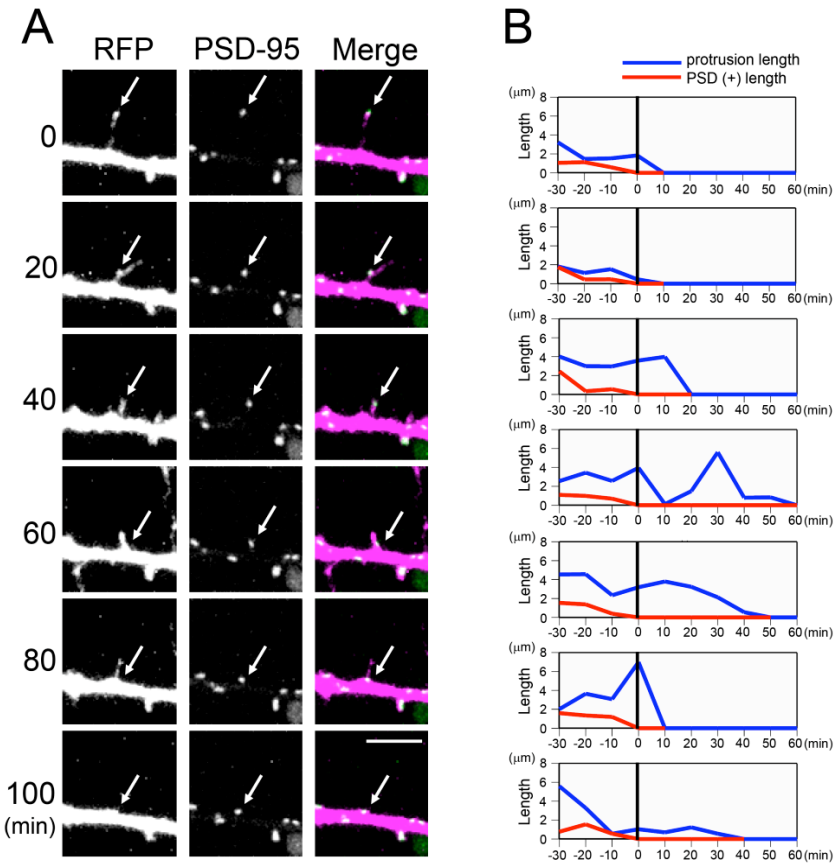
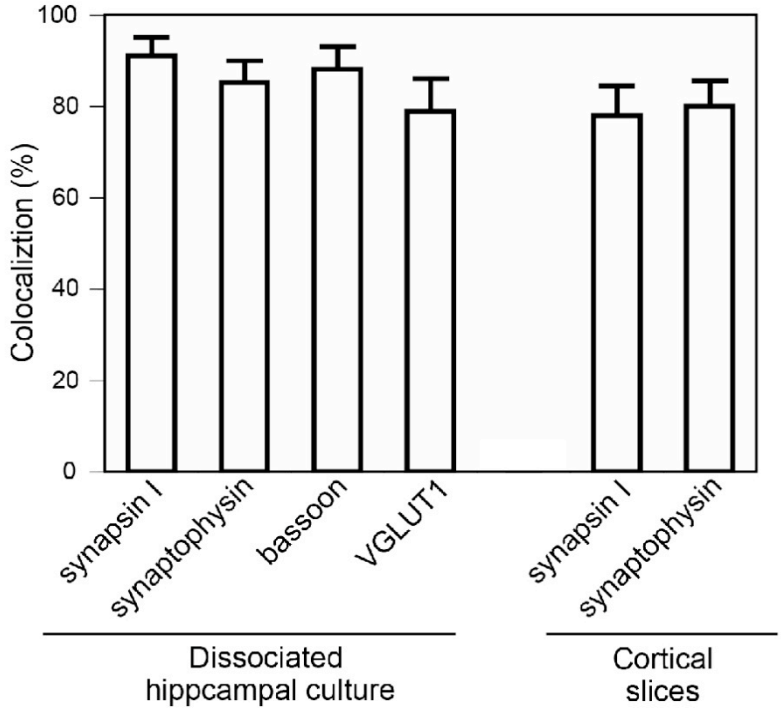
Supplementary Information

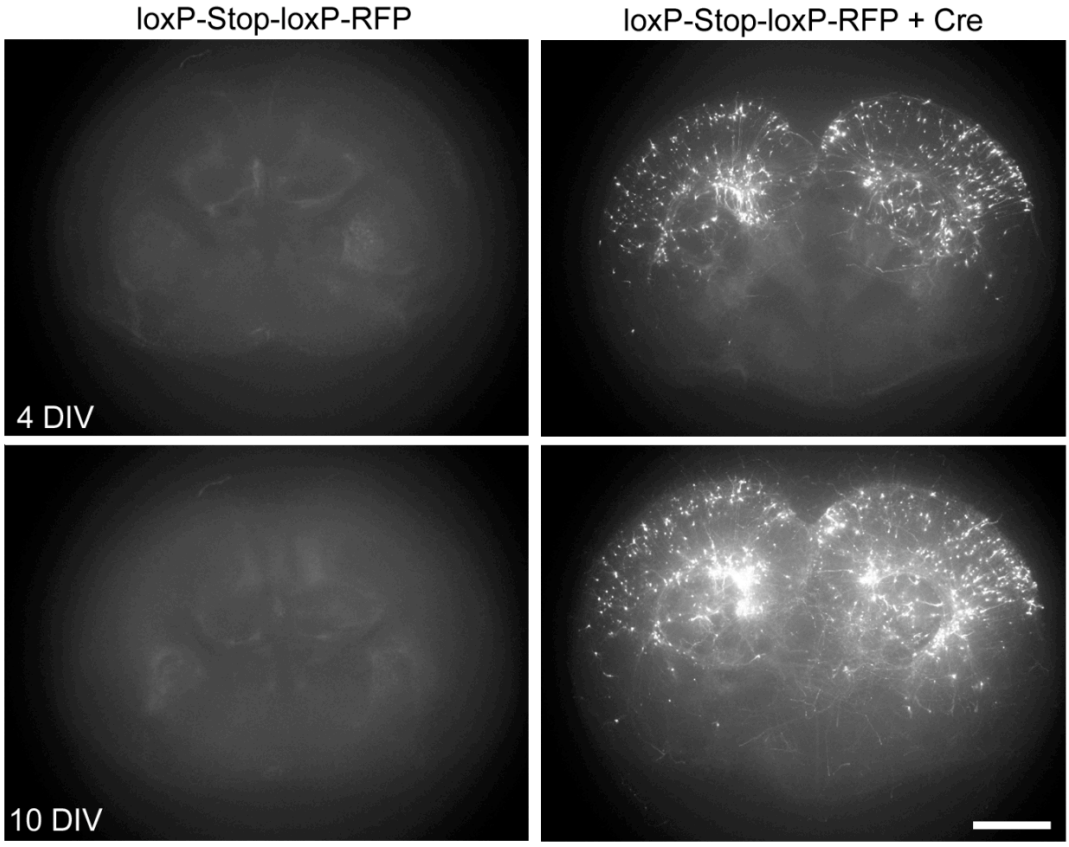
Supplementary Figures



Supplementary Figure S1 Retraction of dendritic protrusions after transfer of PSD-95-GFP puncta to the parental dendritic shaft. **(a)** Time-lapse imaging of PSD-95-GFP and RFP in dissociated hippocampal neurons at 9 DIV. Retrograde translocation of PSD-95-GFP puncta toward the dendritic shaft (arrows) and subsequent absorption of the protrusion are visualized. Bar, 5 μm. **(b)** Lengths of dendritic protrusions and lengths between PSD-95-GFP puncta and the base of the protrusions were plotted for 7 independent image sequences. Retrograde movement of PSDs and shrinkage of protrusions are correlated.



Supplementary Figure S2 Colocalization of PSD-95-GFP puncta and presynaptic markers at the dendritic protrusions. In dissociated cultures, 85-91% of PSD-95-GFP puncta were associated with presynaptic structures immunopositive for either synapsin I (91.0 ± 4.1%), synaptophysin (85.2 ± 4.8%), or bassoon (88.2 ± 5.0%) (n = 15 cells for each condition). Colocalization with vGLUT1 tended to be lower than other presynaptic markers (79.0 ± 7.2%), possibly due to the presence of presynaptic boutons expressing vGLUT2. In cortical slices, 78-80% of PSD-95-GFP clusters in dendritic protrusions were associated with puncta positive with either synapsin I (78.1 ± 6.5%) or synaptophysin (80.1 ± 5.6%) (11 cells for each condition). All data are mean ± SEM.



Supplementary Figure S3 Specificity of a Cre indicator plasmid. To confirm specific expression of RFP from the Cre indicator plasmid (loxP-Stop-loxP-RFP) in the presence of Cre recombinase activity, cortical slices were transfected with either loxP-Stop-loxP-RFP plasmid alone or loxP-Stop-loxP-RFP plasmid plus Cre expression plasmid. RFP fluorescence was detected only in the latter condition, indicating specificity of this indicator plasmid. Scale bar = 1 mm.